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A Model for the Development of Adapted Courses.

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An Educational Cooperative is a confederation of school districts which, in concert with an area university and a state department of education, employ media, mobile facilities, and communications technology to change and improve both educational organization and process. This paper details a general model for the development of adapted courses to be used in this cooperative context. There are two parts to the paper. The first explains Fig. 1, Flow Chart for Development of Adapted Courses, which outlines sequenced questions to be answered and actions to be accomplished before proceeding with the required field of work necessary for developing a particular course adaptation. The second discusses Fig. 2, Program Evaluation and Review Technique (PERT), which outlines sequenced work efforts and the required time for the accomplishment of each effort. In combination, the two charts constitute a planning and implementation model to be used in creating cooperative adapted courses. (Author/GO)

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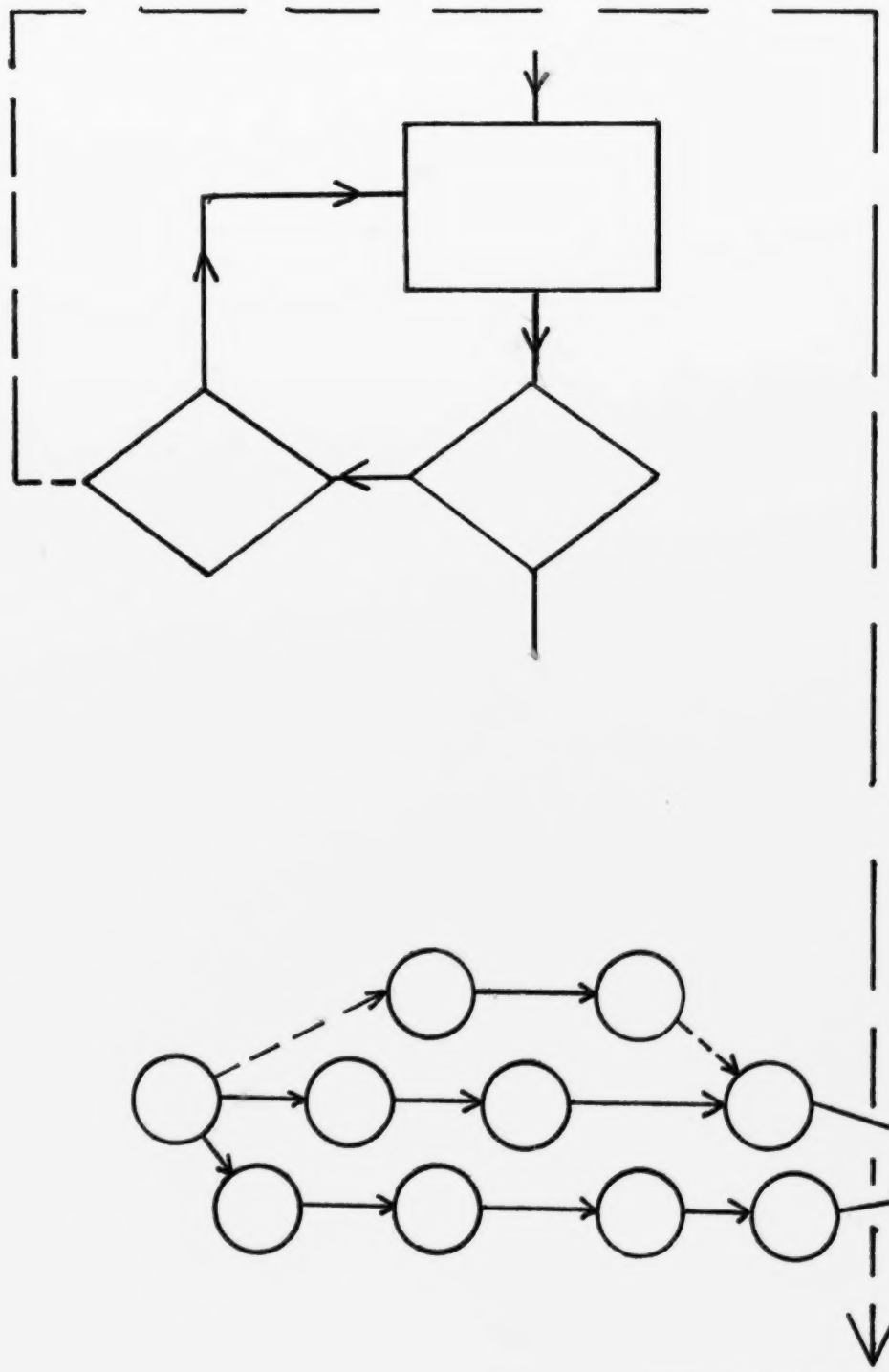
A MODEL FOR THE DEVELOPMENT OF ADAPTED COURSES



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A MODEL FOR THE DEVELOPMENT OF ADAPTED COURSES

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INTRODUCTION

During the 1967-68 school year two courses, physics and creative writing, were adapted to a telelecture-Electrowriter delivery system connecting two West Virginia high schools. Seven students at Pickens High School in Randolph County, West Virginia, received a full year physics course via a telephone line hookup from a teacher at George Washington High School in Kanawha County, West Virginia. The George Washington High School teacher simultaneously taught his own class of 23 students. Creative writing was offered in the same manner for the second semester of the school year to 11 Pickens students.

This initial experience with course sharing, the cooperation between schools or school systems which allows the sharing of qualified personnel, precipitated a wider interest by one cooperating school district during the 1968-69 academic year. This school system extended the delivery system to five high schools under its jurisdiction and shared various specialized personnel. The knowledge gained during 1967-1969 is the experiential base upon which this model is constructed.

The ultimate goal of the Laboratory in adapting courses to electronic media is to affect accessibility of educational opportunity in Appalachia through the development and installation of Educational Cooperatives. A Cooperative is defined as a confederation of school districts which in concert with

an area university and a state department of education employ media, mobile facilities, and communications technology to change and improve both educational organization and process. This paper details a general model for the development of adapted courses to be used in this cooperative context.

In the preparation of this model, the Laboratory has analyzed specific course offerings in the Appalachian setting where schools were unable to offer particular courses for lack of specialized personnel. The Laboratory, working with the local school units, determined ways to provide such courses to students. It aided the local administrative unit in identifying and procuring equipment needed for the delivery of such courses to students who otherwise could not receive them.

The Laboratory's role in the development of an adapted course is one of monitoring and evaluating. Procedurally, the Laboratory collects base data on personnel, operating costs, course description, and the technical reliability of media equipment. From these data specific adapted courses are developed.

This paper has two parts. The first component explains Figure 1, Flow Chart for Development of Adapted Courses, which outlines sequenced questions to be answered and actions to be accomplished before proceeding with the required field work necessary for developing a particular course adaptation. Subjecting a tentative course adaptation

to the rigor of these questions will yield a reasonably accurate estimate of the probable success of the adaptation.

Discussion of Figure 2, PERT* for Adapted Courses, outlines sequenced work efforts and the required time for the accomplishment of each effort. Moving systematically through the 59 events will assure appropriate attention to costs and the required combinations of personnel, equipment, facilities, and materials for implementation of a particular adapted course.

In combination, the two charts constitute a planning (Figure 1) and implementation (Figure 2) model to be used by the staff of the Laboratory in creating cooperative adapted courses. Both functions are critically important in the development process.

Finally, it should be noted that this planning and implementation model is not based solely on the experience of the Laboratory. It is, rather, an inferential model based upon both experience and creative professional judgment.

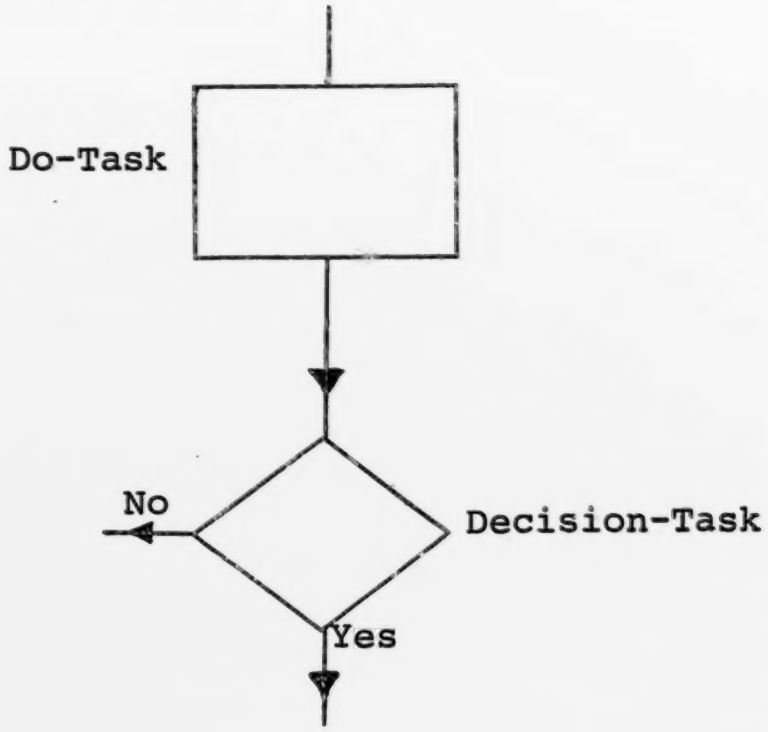
PLANNING FOR ADAPTED COURSES

The Flow Chart for Development of Adapted Courses, attached Figure 1, uses two types of operations: (1) a Do-Task operation involving collection and analysis of data, and (2) a Decision-Task operation structured so that it will yield a yes or no outcome. Do-Tasks are indicated by

*Program Evaluation and Review Technique

the rectangle as shown in the configuration below; Decision-Tasks are represented by the diamond in the configuration.

The small triangular markings on the Flow Chart are arrows which show the direction one is to go from task to task according to the decision reached. The Flow Chart delineates a series of connecting Do-Task and Decision-Task operations.



Because the strategy of the Laboratory is the development and installation of Educational Cooperatives in Appalachia and because field activities are of prime importance in that development process, select field location (1.0) becomes a consideration of high priority. Although it may seem logical for one to begin the planning process with the identification of course objectives, other decisions intervene when the central concern is providing

accessibility to quality educational programs. In selecting electronic media to accomplish accessibility, the choice of equipment, facilities, and personnel interact and determine the instructional objectives that can be achieved.

Continuing through the Flow Chart, the decision are personnel available (2.1) must be made. This decision refers to professional teaching personnel. If the answer to the inquiry into personnel availability is no, then a transfer is made to the decision diamond can new personnel be brought in (2.2). If the answer to this query is no, another field location must be selected in order to adapt a course. If the answer is yes, one can tentatively select type of delivery system (3.0). A delivery system is defined to include the professional personnel combination, selected equipment, and preferred course materials.

Another example will further illustrate the use of the Flow Chart by continuing to (9.1), can teacher-pupil involvement be realized with chosen delivery system. This decision could be no. If the teacher-student involvement cannot be altered, as queried in decision diamond (9.2), transfer must be made to is an alternative delivery system available (5.3). If the answer is yes, the next step is tentatively select a delivery system and continue the process. An answer of no would force the selection of another field location (1.0).

Limitations of the Flow Chart

First, the establishment of the yes-no Decision-Task should not obscure the prospect of having many decisions made in a gray area context rather than the either-or context. Those that appear in the Flow Chart, however, are of the latter variety.

Further, the sequence of tasks of both Do and Decision types, as they appear in the model, suggests the relative importance of these tasks in a given context. For example, the selection of a field location (1.0) in this particular model takes priority over the identification of instructional objectives. In another developmental context the order could be reversed.

To a certain extent an outcome from a higher priority task imposes constraints on the results of those lower in the hierarchy. However, as the Flow Chart indicates, if a given instructional objective is identified in Do-Task (8.0) and it cannot be achieved with the delivery system chosen in Do-Task (3.0), and if this instructional objective is essential, as determined in Decision-Task (8.2), then it is necessary to return to Do-Task (3.0) for the selection of an alternative or modified delivery system. If this latter task cannot be fulfilled, then the planning sequence returns to the beginning where an alternate field location is selected.

Finally, the particular sequence in this Flow Chart typifies a course adaptation to the delivery system. This

is apparent by the manner in which the delivery system choice precedes that of instructional objectives.

IMPLEMENTATION OF ADAPTED COURSES

PERT for Adapted Courses, Figure 2 attached, is a configuration in which events are shown by numbered circles and activities are shown by arrows. It lists events which must be completed in the installation of an adapted course. The numbers above the arrows indicate the average number of months required for the completion of an activity. The critical path, indicated by the heavy line, is the maximum time needed for the development of an adapted course. The configuration breaks itself naturally into a number of groupings of events and activities.

The 1-5 series of events deals with securing the necessary cooperative agreements. Events 6-28 diagram the various surveys which allow the collection of data upon which a cost analysis is made. Since these 23 activities may be concurrent, it is possible to do them in a relatively brief time.

It should also be pointed out that each series, such as 6-9, 10-9, and 13-16, may be accomplished at a different time as long as the time factor does not affect the total data result. For example, a personnel survey completed one year can be used the next provided the survey's validity is not marred by personnel attrition. Separation of these concurrent events can also be allowed if personnel to perform

such surveys are not readily available.

It should be noted that effective PERTing of implementation activities makes precise long term financial planning possible. For example, knowing personnel and equipment needs well in advance permits accurate projection of budgetary requirements.

Of great importance in the implementation of an adapted course are the role agreements obtained among the various individuals involved. Such events as facilities agreement (31), principal role agreement with support personnel (38), and teacher role identification (52) facilitates a smooth installation.

Perhaps the most difficult task is the coordination the various school schedules involved in the activity as represented in events 48-55. These activities can be accomplished concurrently with a considerable time saving; they may also be taken separately if time is not an important factor.

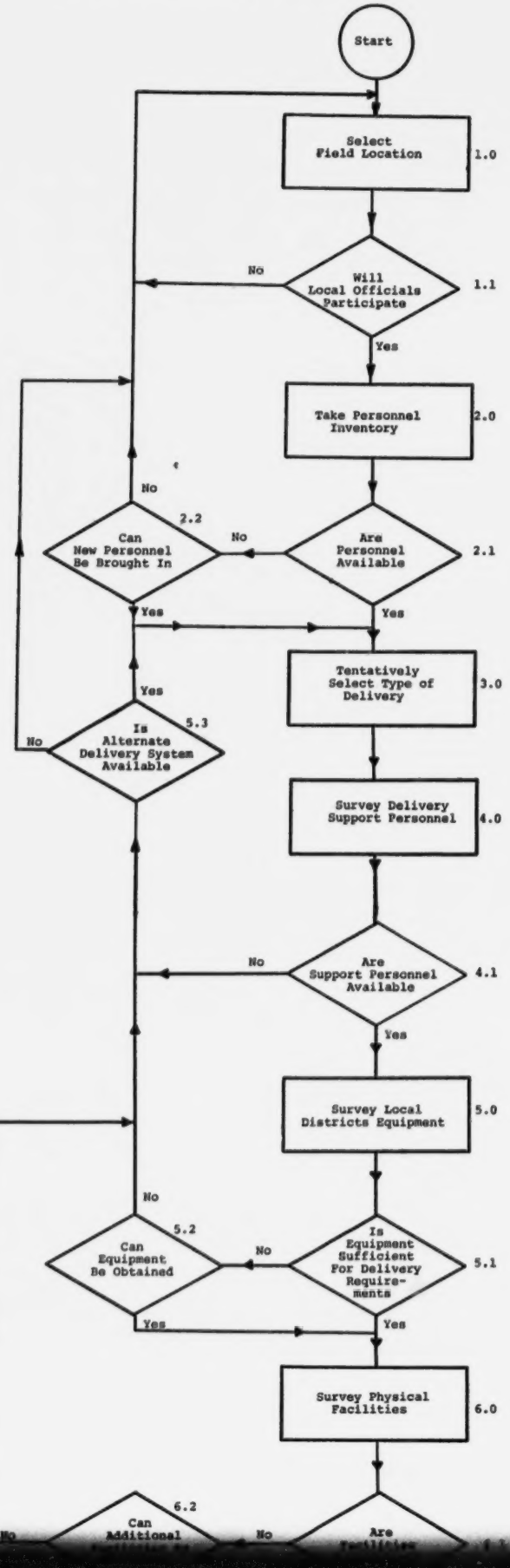
Since the obtaining of program equipment is the most time consuming series, 29-43, it is important that this series be initiated early if the network is not run concurrently.

The identification of instructional objectives, 46-51, is placed late in the sequence so that participating staff can be involved. Both sending and supporting teachers should be involved since an interaction between these teachers can result in a better program.

This Model for the Development of Adapted Courses is an outgrowth of the Laboratory's attempt to increase accessibility to educational opportunity. It outlines a sequence of questions which must be answered and actions which must be accomplished before proceeding with a course adaptation. The Model facilitates the implementation of course adaptations by delineating the events which must be completed and estimating the amount of time required for the completion of activities.

FIGURE 1

FLOW CHART FOR DEVELOPMENT OF ADAPTED COURSES



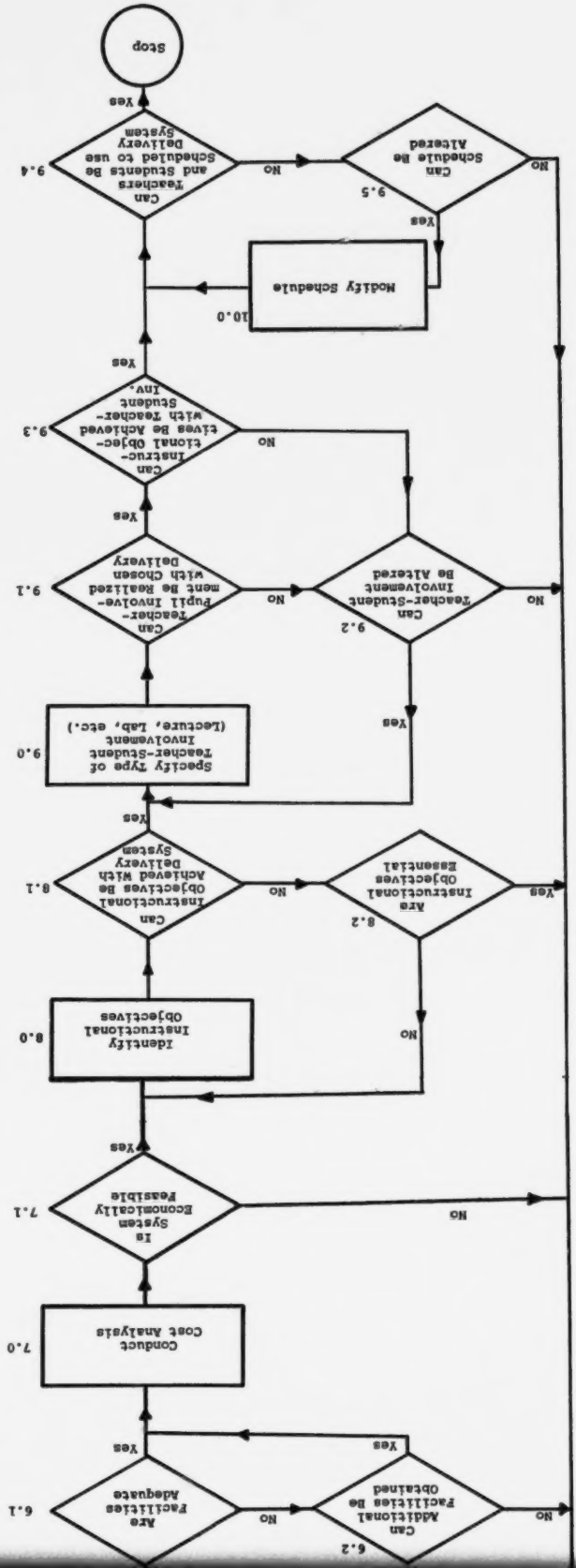
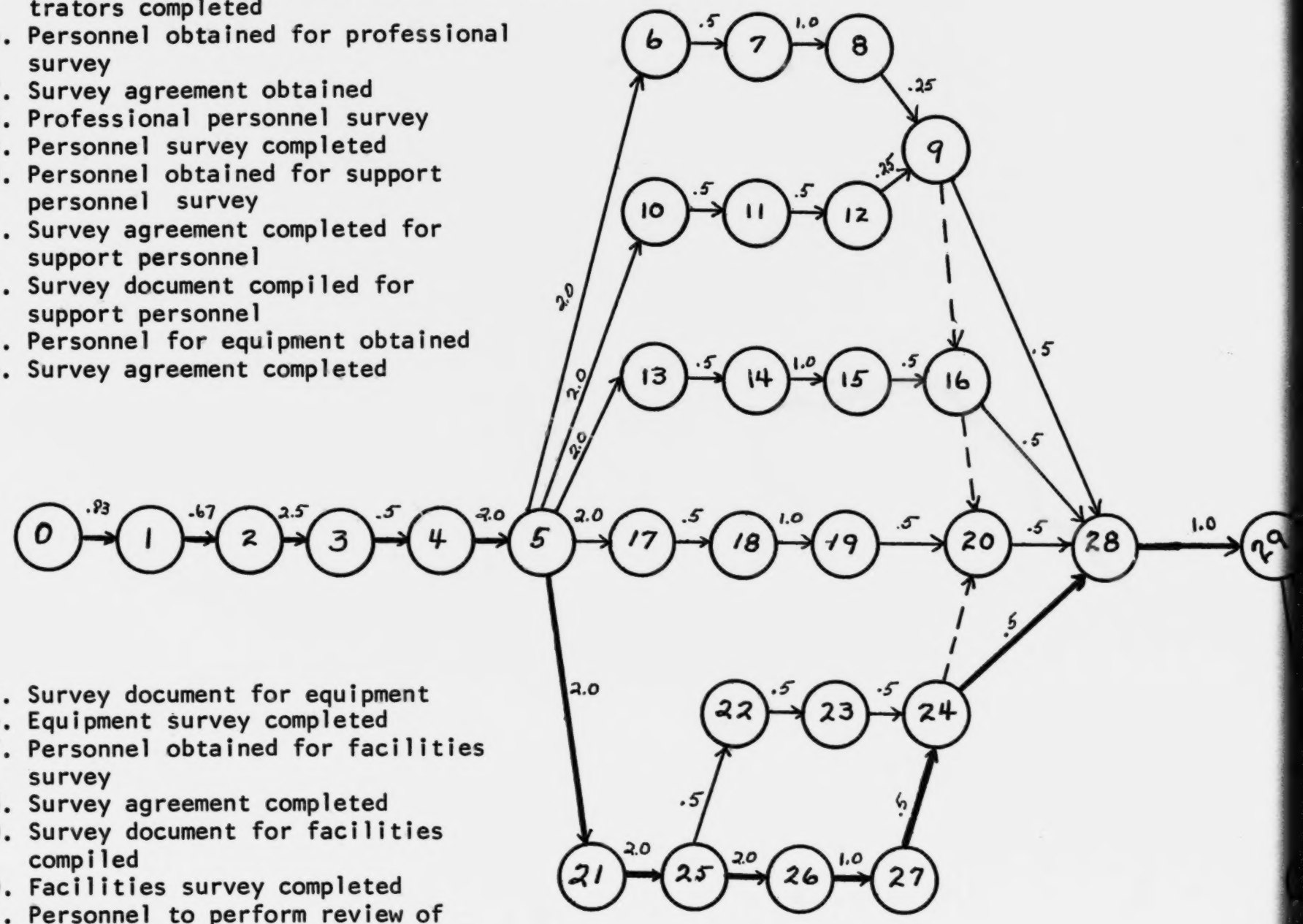

Stop
Yes
Can Teachers and Students Be Scheduled to use Delivery System
9.4
No
Can Schedule Be Altered
9.5
No
Yes
Modify Schedule
10.0
Yes
Can Instruc-tional Objec-tives Be Achieved with Teacher-Student Inv.
9.3
No
Yes
Can Teacher-Pupil Involve-ment Be Realized with Chosen Delivery
9.1
No
Can Teacher-Student Involvement Be Altered
9.2
No
Yes
Specify Type of Teacher-Student Involvement (Lecture, Lab, etc.)
9.0
Yes
Can Additional Facilities Be Obtained
6.2
No
Are Facilities Adequate
6.1
No
Yes
Conduct Cost Analysis
7.0
Is System Economically Feasible
7.1
No
Yes
Identify Instructional Objectives
8.0
No
Are Instructional Objectives Essential
8.2
Yes
Can Instructional Objectives Be Achieved With Delivery System
8.1
No
Yes

FIGURE 2

PERT* FOR ADAPTED

1. Initial contact with local education (LEA) officials obtained
2. Agreement between AEL and local officials negotiated
3. Agreement between AEL and local officials signed
4. Agreement obtained from superintendent to visit schools
5. Meetings with participating school administrators completed
6. Personnel obtained for professional survey
7. Survey agreement obtained
8. Professional personnel survey
9. Personnel survey completed
10. Personnel obtained for support personnel survey
11. Survey agreement completed for support personnel
12. Survey document compiled for support personnel
13. Personnel for equipment obtained
14. Survey agreement completed



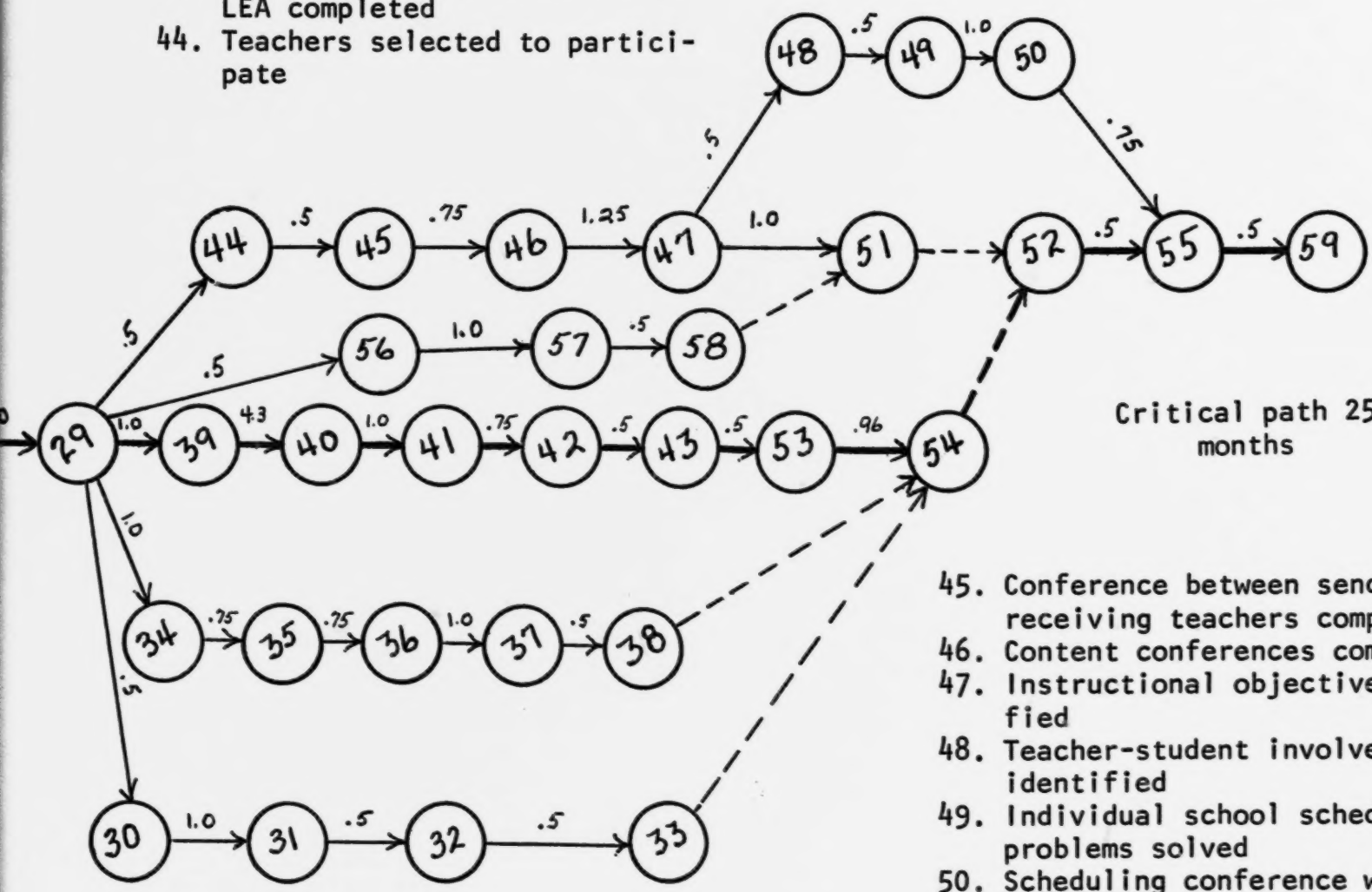
15. Survey document for equipment
16. Equipment survey completed
17. Personnel obtained for facilities survey
18. Survey agreement completed
19. Survey document for facilities compiled
20. Facilities survey completed
21. Personnel to perform review of materials obtained
22. Coordination conference completed
23. Coordination document completed
24. Use requirement stipulated
25. Materials identified for review
26. Materials obtained
27. Review of current programs completed
28. Cost analysis completed
29. Delivery system determined
30. Required facilities identified
31. Agreement to furnish facilities obtained

*Program Evaluation and Review Technique

RE 2

APTED COURSES

32. Written agreement to furnish facilities obtained
33. Facilities obtained
34. Conference with media vendor complete
35. Conference with LEA officials
36. Support personnel procurement method identified
37. Support personnel secured
38. Role agreement with support personnel obtained
39. Funding request submitted
40. U.S.O.E. approval secured
41. Purchase order mailed
42. Equipment delivered
43. Installation conference with LEA completed
44. Teachers selected to participate



Critical path 25.51 months

45. Conference between sending and receiving teachers completed
46. Content conferences completed
47. Instructional objectives identified
48. Teacher-student involvement identified
49. Individual school scheduling problems solved
50. Scheduling conference with LEA officials completed
51. Course description completed
52. Teacher role definition completed
53. Installation request made
54. Equipment installed
55. Schedule for program completed
56. Letter requesting accreditation submitted
57. Conference with accrediting official completed
58. Accreditation received
59. Program installed